Mathematical Morsels: Solutions to Tasks From the Fall Issue

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Abstract: *In this column, we share solutions submitted by our readers for tasks provided in the* Mathematical Morsels *column of our Fall issue. The editors wish to thank those who took the time to submit tasks and YouTube solutions. We encourage teachers and their students to submit suggestions and tasks for the upcoming Fall 2013 issue to octm.morsels@gmail.com.*

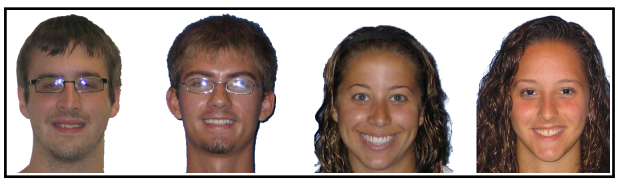
October

Original Task: What is the sum of all of the digits that you would need to write down a complete list of the whole numbers from 0 through 1,000,000,000?

Solution submitted by Courtney Turner, Miami University teacher candidate
Screencast available at `http://tinyurl.com/SP13-OCT`

November

Original Task: This year, Glenview Soccer League saw a 10% increase in its total participation over last year. There has been a 5% increase in the number of males and a 20% increase in the number of females. What fraction of the soccer league is now male?



Solution submitted by Evan Crawford, Michael Elting, Amy Heller, and Lisa Werwinski, Miami University teacher candidates
Screencast available at `http://tinyurl.com/SP13-NOV`

December

Original task: Annette, Bart, and Cassidy repeatedly take turns tossing a fair die in the given order (A, B, C, A, B, C, A, ...). What is the probability that Cassidy will be the first one to toss a 5?

No solution provided. Readers are encouraged to submit solutions to `octm.morsels@gmail.com`.

January

Original task: At 1:00 p.m., two hikers began walking, the first from Amityville to Bridgewater, the second from Bridgewater to Amityville along the same path. Each walked at a constant speed. They met at 4:00 p.m. The first hiker arrived at Bridgewater 2.5 hours before the second hiker arrived at Amityville. When did the second hiker get to Amityville?

Solution submitted by Courtney Frydryk, Miami University teacher candidate
Screencast available at `http://tinyurl.com/SP13-JAN`

February

In quadrilateral $ABCD$, the measure of $\angle B$ = the measure of $\angle C = 120°$, $AB = 3$, $BC = 4$, and $CD = 5$. Find the area of $ABCD$.

Solution submitted by Audrey Altieri, Brooke Kelly, and Robert Knurek, Miami University teacher candidates
Screencast available at `http://tinyurl.com/SP13-FEBR`

March

Original task: A bookshelf is 36 inches long and contains n books each w inches thick. If each book were half an inch thinner, the shelf would hold six more of the same book. What is $\frac{n}{w}$?

Solution submitted by Allie Furlong, Kelly Ramirez, and Madeline Van Benschoten, Miami University teacher candidates. Screencast available at `http://tinyurl.com/SP13-MAR`